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IN THE APPLICATION
OF
GERALD HATKOFF
FOR
LOCKING LAPS FOR VINYL SIDING

LOCKING LAPS FOR VINYL SIDING

BACKGROUND OF THE INVENTION

1. FIELD OF THE INVENTION

5 The present invention relates to building siding panels, and more particularly to a system of siding panels having a locking lap assembly for increasing the wind resistance of the siding panels.

2. DESCRIPTION OF THE RELATED ART

10 Vinyl and metal siding panels are increasingly used for covering the exterior of building structures. Generally, the siding panels are formed as single lap panels and provide a nailing strip disposed along the top edge of the panels to fasten the panels to the building structure. The panels also provide a tongue and groove connection means for aligning and securing
15 vertically adjacent panels. In cases where a single panel is not long enough to extend across an entire surface of a building, additional panels must be positioned horizontally adjacent to one another. Typically the horizontally adjacent panels overlap one another, but are not secured to one another. This results in the
20 siding panels often being lifted from the building structure under high wind conditions.

The following patent documents disclose existing exterior siding systems.

United Kingdom Provisional Patent Specification No. 609,361
filed on March 12, 1946 discloses a system for the external
cladding of framed buildings. The system provides a plurality of
cladding units with uprights that have gutter elements secured to
them. The gutter elements are secured to the uprights by bracket
members. The brackets then engage the plurality of cladding
units.

United States Patent No. 6,341,463 issued to Dickey et al.
on January 29, 2002 discloses siding panels. The siding panels
are secured to the exterior of a support structure for a
building. The siding panels are secured by a nail hem. A
receiver is integrally formed in each of the panels immediately
below the nail hem to allow adjacent panels to overlap. The
overlapping of the panels aid in shedding precipitation from the
exterior of the panels.

United States Patent No. 6,122,878 issued to Pliley, R. on
September 26, 2000 discloses a seamless siding system. The
siding is made from a planar material such as vinyl, polyvinyl
chloride, aluminum or steel. The siding is constructed in a
continuous material strip with fastener slots disposed along the
edges of the strip. The top and bottom fastener strips are used
to secure the siding to the building. A series of top fastener
slots are disposed through the planar material so that the siding
can slide in response to thermal expansion and contraction.

United States Patent No. 5,224,318 issued to Kemerer, W.J.
on July 6, 1993 discloses molded protective exterior weather
resistant building panels. The building panels are formed from

thermoplastic material. The building panels provide fastener slots for fastening the panels to the exterior of a building. Each panel provides an upwardly projecting lip portion having an engageable groove along the top of the panel and mounting hook disposed along the bottom of the panel. The mounting hook of one panel engages the top lip and groove on the panel positioned underneath. The mounting hooks and engagement grooves allow the building panels to be easily aligned during installation.

United States Patent No. 4,969,302 issued to Coggan et al. on November 13, 1990 discloses siding panels. The siding panels have a cover sheet of hardboard fixed by an adhesive to a lower backboard layer of foam resin. A layer of sealant is disposed on the top surface of the cover layer. Each siding panel has a plurality of nail holes disposed along its top surface for securing the panels to the frame of a building. The fastener holes are elongated longitudinally to permit expansion and contraction of the cover sheet. A locking structure is disposed along the bottom edge of each panel.

United States Patent No. 4,864,787 issued to Bukowski, S. on September 12, 1989 discloses an interlocking corner structure for siding. The panels are typical lap board type panels having a corner overlapping hook portion that interlocks with a similarly shaped end portion of an adjacent corner panel.

United States Patent Application No. 2002/0092256 published on July 18, 2002 to Hendrickson et al. discloses a fiber polymeric composite siding unit. The individual siding units are interconnected to adjacent units with a tongue and groove

mechanism. Adjacent side-by-side units are interconnected end-to-end by an insert that is secured to the units by an adhesive layer.

United States Patent No. 4,617,774 issued to Pittman et al. on October 21, 1986, United States Patent No. 4,450,665 issued to Katz, H. on May 29, 1984, United States Patent No. 3,998,021 issued to Lewis, E.R. on December 21, 1976, United States Patent No. 3,703,795 issued to Mattes, L.H. on November 28, 1972, United States Patent No. 3,667,180 issued to Tischuk, W. on June 6, 1972, United States Patent No. 3,520,099 issued to Mattes, L.H. on September 16, 1968, United States Patent No. 3,458,962 issued to Kendall, J.R. on August 5, 1969, United States Patent No. 3,304,676 issued to Sallie et al. on February 21, 1967 each disclose single lap overlapping siding panel systems.

United States Patent No. 4,400,918 issued to Lewis, E.R. on August 30, 1983 and United States Patent No. 4,081,939 issued to Culpepper Jr., et al. on April 4, 1978 disclose backer boards for siding panels.

None of the above inventions and patents disclose a siding panel system having a securing device for securing horizontally adjacent siding panels to increase their overall wind resistance.

None of the above inventions and patents, taken either singly or in combination, is seen to describe the instant invention as claimed. Thus locking laps for vinyl siding solving the aforementioned problems is desired.

SUMMARY OF THE INVENTION

The laps for vinyl siding of the present invention provide a device for securing adjacent siding panels and preventing them from being removed from a building structure during strong wind conditions. The present invention provides a system of siding panels having a locking lap assembly secured to the siding panels. The siding panels comprise typical single lap siding panels having a mounting strip disposed along a top edge of each of the panels. The mounting strip provides a plurality of fastener receiving holes for mounting the siding panels to the exterior surface of a building structure. Each of the panels has a curved engaging portion extending along the top edge of the front surface. The curved engaging portion engages a retaining lip that extends along the bottom edge of the rear surface of each of the siding panels to align vertically adjacent siding panels.

A locking lap assembly is secured at the two ends of each siding panel to securely connect each siding panel to the horizontally adjacent siding panels located on either side. The locking lap assembly comprises a locking lap and a spacing member. The spacing member is secured directly to the rear surface of the siding panel. The locking lap member is secured to the spacing member and extends beyond the end of the siding panel. The spacing member provides a space between the locking lap and the rear surface of the siding panel, to allow a locking lap of an adjacent panel to be received between the locking lap and the siding panel. The locking laps of two adjacent panels

overlap one another to provide a secure attachment of the adjacent panels.

Accordingly, it is a principal object of the invention to provide a system of locking laps that securely attach adjacent siding panels to prevent the siding panels from being separated from a building structure during high wind conditions.

It is another object of the invention to provide a system of locking laps that is reversible so that the direction of the laps may be altered depending on the direction of the wind.

It is a further object of the invention to provide a system of siding panels with locking laps that is aesthetically pleasing.

Still another object of the invention is to provide a locking lap assembly that may be easily secured to any existing siding panels.

It is an object of the invention to provide improved elements and arrangements thereof for the purposes described which is inexpensive, dependable and fully effective in accomplishing its intended purposes.

These and other objects of the present invention will become readily apparent upon further review of the following specification and drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

Fig. 1 is an environmental, perspective view of a vinyl siding system with locking laps according to the present invention.

Fig. 2 is a front plan view of two adjacent panels of vinyl siding.

Fig. 3 is a rear plan view of a vinyl siding panel having the locking laps.

5 Fig. 4 is an exploded rear plan view of the vinyl siding panel having the locking laps.

Fig. 5 is a rear plan view of adjacent panels of vinyl siding attached together with the locking laps.

10 Fig. 6 is a cross sectional view of the panel shown in Fig. 3.

Fig. 7 is a front perspective view of two separated, adjacent vinyl siding panels.

Similar reference characters denote corresponding features consistently throughout the attached drawings.

15 **DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT**

The present invention provides a locking lap assembly for securely attaching adjacent siding panels that are mounted to the exterior of a building structure. The locking lap assembly increases the wind resistance of the siding panels. Fig. 1 is an environmental perspective view of a siding panel system 10 mounted to the exterior of a building B. The siding panel system 10 comprises a plurality of longitudinally extending siding panels 12 disposed horizontally along the building B. The siding panels 12 are arranged in rows, positioned vertically above one another, that extend from the bottom of the building B to the top

of the building B. The number of panels 12 used depends on the exterior dimensions of the building B.

Fig. 2 is a front plan view of two adjacent siding panels 12, 12a. Each of the panels 12 in the siding panel system 10 have identical features, therefore a description of only one panel is necessary. The siding panel 12 comprises a front surface 14, a rear surface 26 (shown in Fig. 3), a first end 22, a second end 24, a top edge 18 and a bottom edge 20. Referring to Fig. 3, each of the panels 12 further comprises a fastener strip 50 that extends along the top edge 18 of the panel 12. The fastener strip 50 provides a plurality of fastener receiving holes 52 for receiving fasteners to mount the siding panel 12 to the building B.

Each of the panels, as shown in Figs. 2,3 and 6, further comprise a retaining lip 48 disposed along the bottom edge 20 on the rear surface 26 of the panel 12. Each panel 12 also provides a curved engaging member 54, which extends along the top edge 18 of the panel 12 on the front surface 14. The engaging member 54 of the panel 12 is received by the retaining lip 48 of a vertically adjacent panel positioned directly above the panel 12. The engaging member 54 and the retaining lip 48 align the vertically adjacent panels 12.

According to certain preferred embodiments of the present invention, the panels 12 are single lap panels that have a main body comprising longitudinally extending, generally flat and inclined main body portions interconnected by longitudinally extending offset step portions, as shown in Fig. 7. The present

invention is not limited to being used with single lap panels, and may be used with any type, shape or size siding panels. For example, the panels 12 may also comprise beaded panels, four inch double panels and five inch double panels. The panels 12 of the present invention are preferably made from a vinyl or more particularly, polyvinyl chloride. The panels 12, however, are not limited to being made from vinyl and may be made from any suitable siding panel material including, but not limited to, aluminum, steel and extruded polymer materials.

Referring to Fig. 2, the siding panel system 10 further comprises a locking lap assembly 30 for securing together horizontally adjacent siding panels 12 and increasing the wind resistance of the panels 12. Each panel 12 comprises a siding lap disposed adjacent to the first end 22 and the second end 24 of the panel 12. The siding laps on each end of the panel 12 are identical. Fig.3 shows a siding lap disposed adjacent to the second end 24 of the panel 12. The siding lap comprises a locking lap member 32 and a spacing member 34.

Fig. 4 is an exploded rear plan view of a siding panel 12. The spacing member 34 comprises a generally rectangular body having a front surface 40 and a rear surface 42. The rear surface 42 of the spacing member 34 is secured to the rear surface 26 of the panel 12. The locking lap member 32 comprises a generally rectangular main body having a front surface 36, a rear surface 38, an interior edge 46 and an exterior edge 44. The rear surface 38, along the interior edge 46, of the locking lap member 32 is secured to the front surface 40 of the spacing

member 34. As shown in Fig. 3, the exterior end 44 of the locking lap member 32 extends beyond the end of the panel 12. Fig. 6 is a cross sectional view of the panel 12 showing the spacing member 34 disposed between the locking lap member 32 and the panel 12. The spacing member 34 provides a space between the locking lap member 32 and the panel 12.

The spacing member 34 is preferably secured to the rear surface 26 of the panel 12 by an adhesive. The locking lap 32 is also preferably secured to the front surface 40 of the spacing member 34 by a layer of adhesive.

The shape of the main body of the spacing member 34 and the locking lap 32 will conform to the shape of the panel 12 being used. As shown in Fig. 6, the shape of the spacing member 34 and the locking lap 32 conform to the shape of the single lap panel 12 of the preferred embodiment. According to certain preferred embodiments of the present invention, the spacing member 34 has a main body with a plurality of longitudinally extending, generally flat body portions interconnected by longitudinally extending offset step portions. The locking lap 32 has a main body with a plurality of longitudinally extending, generally flat body portions interconnected by longitudinally extending offset step portions. The shape of the spacing member 34 and the locking lap 32 will vary, however, depending on the type of panel 12 being used.

Fig. 5 shows two adjacent siding panels 12, 12a secured together by the locking lap assembly 30. The exterior end 44a of the adjacent panel 12a is received between the locking lap 32 and

the rear surface 26 of the first panel 12. The locking lap 32 of the first panel 12 overlaps the locking lap 32a of the adjacent panel 12a. The first panel 12 is received between the locking lap 32a and the rear surface 26a of the adjacent panel 12a. The first panel 12 and the adjacent panel 12a slide over one another until the exterior ends 44,44a of the locking laps 32,32a contact the spacing members 34,34a respectively. The locking laps 32,32a and the panels 12,12a overlap one another to secure the adjacent panels 12,12a together. This overlapping connection increases the wind resistance of the siding panels 12,12a. Fig. 7 shows the adjacent panels 12,12a separated from one another and depicts how the exterior surface 44a of the adjacent panel 12a is received in the space created between the first panel 12 and the locking lap 32 by the spacing member 34.

The locking lap assembly 30 is reversible to adapt to the direction of the wind. Particularly, the adjacent panels 12,12a may be arranged so the exterior end 44 of the first panel 12 is received into the space between the adjacent locking lap 32a and the rear surface 26a of the adjacent panel 12a.

The spacing member 34 and the locking lap 32 are preferably made from a vinyl material and particularly from polyvinyl chloride. The spacing member 34 and the locking lap, however, may also be made from any suitable siding material including, but not limited to, aluminum, steel and extruded polymer materials.

According to one aspect of the present invention, the front surface 14 of the panels 12 is textured to improve the aesthetic appearance of the siding panel assembly 10. The texture on the

front surface 14 of the panels 12 preferably simulates natural wood grains.

5 It is to be understood that the present invention is not limited to the embodiment described above, but encompasses any and all embodiments within the scope of the following claims.